

St. Maries River Subbasin Assessment and Total Maximum Daily Loads



July 2003

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Acknowledgments

Glen Pettit of the Department of Environmental Quality (DEQ) and Adnan Zahoor of the Department of Lands provided GIS support for the sediment modeling and map development. Bijay Adams of DEQ developed data and model input values. Jennifer Burton of DEQ developed tabular data. Jennifer Burton and Amy Luft of DEQ performed editorial review.

Cover photograph by Don St. George.

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Abbreviations, Acronyms, and Symbols

303(d)	Refers to section 303 subsection (d) of the Clean Water Act, or a list of impaired water bodies required by this section	EPA	United States Environmental Protection Agency
μ	micro, one-one thousandth	GIS	Geographical Information Systems
μg/L	micrograms per liter	GPD	Gallons per day
§	Section (usually a section of federal or state rules or statutes)	IDAPA	Refers to citations of Idaho administrative rules
AFDM	Ash-free dry mass	IDL	Idaho Department of Lands
BLM	United States Bureau of Land Management	INFISH	The federal Inland Native Fish Strategy
BMP	best management practice	KEA	Kootenai Environmental Alliance
BURP	Beneficial Use Reconnaissance Program	km	kilometer
C	Celsius	L	liter
CFR	Code of Federal Regulations (refers to citations in the federal administrative rules)	LA	load allocation
cfs	cubic feet per second	LC	load capacity
chl <i>a</i>	chlorophyll <i>a</i>	m	meter
cm	centimeters	mg	milligram
CWA	Clean Water Act	mi	mile
CWE	cumulative watershed effects	mi²	square miles
DEQ	Department of Environmental Quality	mg/L	milligrams per liter
<i>E. Coli</i>	<i>Escherichia coli</i> bacteria	mL	milliliter
		mm	millimeter
		MOS	margin of safety

MWMT	maximum weekly maximum temperature	SSTEMP	Stream Segment Temperature Model
N/A	not applicable	STATSGO	State Soil Geographic Database
NB	natural background	TKN	total Kjeldahl nitrogen
nd	no data (data not available)	TMDL	total maximum daily load
NPDES	National Pollutant Discharge Elimination System	TSS	total suspended solids
NRCS	Natural Resource Conservation Service	t/y	tons per year
NTU	nephelometric turbidity unit	U.S.	United States
PCR	primary contact recreation	USC	United States Code
RUSLE	Revised Universal Soil Loss Equation	USDA	United States Department of Agriculture
SCC	Soil Conservation Commission	USFS	United States Forest Service
SCR	secondary contact recreation	USGS	United States Geological Survey
SFI	DEQ's stream fish index	WAG	Watershed Advisory Group
SHI	DEQ's stream habitat index	WBAGII	<i>Waterbody Assessment Guidance, Version II</i>
SMI	DEQ's stream macroinvertebrate index	WLA	wasteload allocation
SRW	Special Resource Water		

Executive Summary

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters (33 USC § 1251.101). States and tribes, pursuant to Section 303 of the CWA are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the waters whenever possible. Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). States and tribes must periodically publish a priority list of impaired waters, currently every two years. For waters identified on this list, states and tribes must develop a total maximum daily load (TMDL) for the pollutants, set at a level to achieve water quality standards. This document addresses the water bodies in the St. Maries Subbasin that have been placed on what is known as the "303(d) list."

This subbasin assessment and TMDL analysis has been developed to comply with Idaho's TMDL schedule. This assessment describes the physical, biological, and cultural setting; water quality status; pollutant sources; and recent pollution control actions in the St. Maries Subbasin located in northern Idaho. The first part of this document, the subbasin assessment, is an important first step in leading to the TMDL. The starting point for this assessment was Idaho's current 303(d) list of water quality limited water bodies. Eighteen segments of the St. Maries Subbasin were listed on this list. The subbasin assessment portion of this document examines the current status of 303(d) listed waters, and defines the extent of impairment and causes of water quality limitation throughout the subbasin. The loading analysis quantifies pollutant sources and allocates responsibility for load reductions needed to return listed waters to a condition of meeting water quality standards.

Subbasin at a Glance

Hydrologic Unit Code17010304

Water Quality Limited Segments.....18

Beneficial Uses Affected.....Cold water, salmonid spawning,
primary and secondary contact
recreation

Pollutants of ConcernSediment, nutrients, bacteria,
dissolved oxygen, temperature

Known Land UsesForestry, agriculture,
recreation

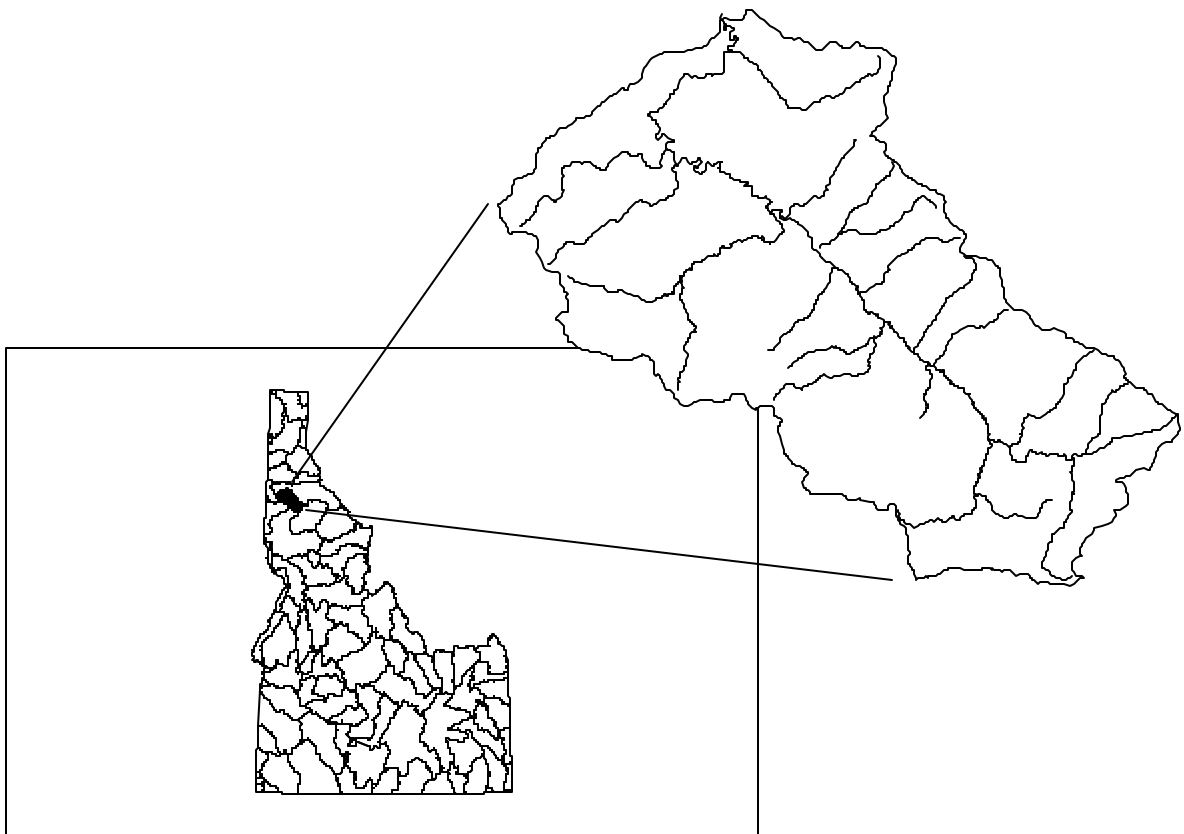


Figure A. Location of St. Maries Subbasin

Key Findings

The St. Maries River watershed remained in a relatively natural condition until the early twentieth century when miners, loggers, and ranchers began to settle the area. It has a history of timber harvest, grazing, and placer recovery of garnets and gold. Streams in the subbasin are 303(d) listed for sediment, temperature, habitat alteration, nutrients, bacteria and dissolved oxygen. Sixteen of the eighteen segments are listed for sediment, while nine are listed for temperature, eight are listed for habitat alteration, four for nutrients, and one each are listed for dissolved oxygen and bacteria. Sediment originates in the basin primarily from eroding banks, road crossings, and encroachments. Temperature is most affected by stream shading. Nutrients and bacteria arise from livestock and human wastes, while dissolved oxygen is affected by discharge of oxygen demanding materials that, in the St. Maries Subbasin, are discharged from wastewater treatment facilities. Impairment of cold water aquatic life has been demonstrated by composite scores of fish, macroinvertebrate and habitat indices. These scores generally indicate full support in the headwaters, but reveal use impairment in the downstream reaches of the both the tributaries and the river itself.

An assessment of temperature data indicates that all streams assessed exceed temperature standards. Dissolved oxygen was not found to be a limiting factor in Santa Creek, while bacteria were not found to limit contact recreation in Gramp Creek. Although segments are listed for habitat alteration, habitat alteration is not an effect that can be allocated in a TMDL. An assessment of nutrient data indicates that none of the stream segments listed for nutrients are impaired by nutrients. Sediment data and model results were assessed. Residual pool volumes generally indicate that many of the downstream reaches of the tributaries and the river have relatively low residual pool volumes. Sediment yield monitoring indicates that Alder, Charlie, Santa, Tyson, and Carpenter Creeks and the St. Maries River including its West and Middle Forks have yields well in excess of thresholds expected to cause water quality impairment. John, Emerald, Renfro, Crystal, and Thorn Creeks have sediment yields close to or slightly above the threshold found on streams supporting the cold water aquatic life.

Since the main stem of the St. Maries River is sediment limited, a sediment TMDL is required for the entire St. Maries Subbasin. Temperature TMDLs are required for Gold Center Creek, including Gramp, Flewsie, Emerald, and Santa Creeks as well as the St. Maries River and its West and Middle Forks.

Table A. Streams and pollutants for which TMDLs were developed.

Stream	Segment ID Number	1998 303(d) Boundaries	Pollutant(s)
St. Maries River	3579	Town of Mashburn to St. Joe River	Sediment, temperature
St. Maries River	3580	Town of Clarkia to town of Mashburn	Sediment, temperature
West Fork St. Maries River	3581	Headwaters to St. Maries River	Sediment, temperature
Middle Fork of the St. Maries River	3594	Headwaters to St. Maries River	Sediment, temperature
Santa Creek	3585	Headwaters to St. Maries River	Sediment, temperature
Carpenter Creek	3591	Headwaters to St. Maries River	Sediment
Emerald Creek	3593	East Fork – Headwaters to St. Maries River	Sediment, temperature
Gold Center Creek	3596	Windy Creek to Middle Fork of the St. Maries River	Temperature
Flewsie Creek	3596	Headwaters Creek to Middle Fork of the St. Maries River	Temperature
Alder Creek	3583	Headwaters to St. Maries River	Sediment
Tyson Creek	3589	North Fork Tyson Creek to St. Maries River	Sediment
Thorn Creek	3582	Headwater to St. Maries River	Sediment
Renfro Creek	3588	Headwaters to Davis Creek	Sediment
Crystal Creek	3590	Headwaters to St. Maries River	Sediment
Charlie Creek	3587	Headwaters to Santa Creek	Sediment
John Creek	3584	Unnamed tributary 7.5km upstream to St. Maries River	Sediment
Gramp Creek	3598	Headwaters to Gold Center Creek	Temperature

Table B. Summary of assessment outcomes.

Waterbody Segment	Assessment Unit	Pollutant	TMDL(s) Completed	Recommended Changes to 303(d) List	Recommended Schedule Changes	Justification/ Notes¹
St. Maries River 17010304 3579 17010304 3580	PN015 _05	Sediment	1 (for entire watershed)	Change unknown pollutant to temperature and/or sediment	None	N/A
St. Maries River 17010304 3579 17010304 3580	PN015 _05	Temperature	1 (for entire watershed)	Change unknown pollutant to temperature and/or sediment	None	N/A
St. Maries River 17010304 3579 17010304 3580	PN015 _05	Nutrients	0	Delist for nutrients	None	Periphyton data do not indicate nuisance levels
West Fork St. Maries River 17010304 3581	PN017 _02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
West Fork St. Maries River 17010304 3581	PN017 _02	Temperature	1	None	None	N/A
Middle Fork St. Maries River 17010304 3594	PN018 _02/ 04/05	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Middle Fork St. Maries River 17010304 3594	PN018 _02/ 04/05	Temperature	1	None	None	N/A
Thorn Creek 17010304 3582	PN026 _02	Nutrients	0	Delist for nutrients	None	Periphyton data do not indicate nuisance levels
Thorn Creek 17010304 3582	PN026 _02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Alder Creek 17010304 3583	PN08 _02	Nutrients	0	Delist for nutrients	None	Periphyton data do not indicate nuisance levels

Table B, continued.

Waterbody Segment	Assessment Unit	Pollutant	TMDL(s) Completed	Recommended Changes to 303(d) List	Recommended Schedule Changes	Justification/ Notes ¹
Alder Creek 17010304 3583	PN08_02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
John Creek 17010304 3584	PN09_02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Santa Creek 17010304 3585	PN010_04	Dissolved oxygen	0	Delist for dissolved oxygen	None	Dissolved oxygen data meet standard
Santa Creek 17010304 3585	PN010_04	Nutrients	0	Delist for nutrients	None	Periphyton data do not indicate nuisance levels
Santa Creek 17010304 3585	PN010_04	Temperature	1	None	None	N/A
Santa Creek 17010304 3585	PN010_02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Charlie Creek 17010304 3587	PN011_02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Renfro Creek 17010304 3588	PN024_02/03	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Tyson Creek 17010304 3589	PN013_02/03	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Crystal Creek 17010304 3590	PN023_02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Carpenter Creek 17010304 3591	PN014_02	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL

Table B, continued.

Waterbody Segment	Assessment Unit	Pollutant	TMDL(s) Completed	Recommended Changes to 303(d) List	Recommended Schedule Changes	Justification/ Notes ¹
Emerald Creek 17010304 3593	PN016 _03	Sediment	1	None	None	Covered by St. Maries River Sediment TMDL
Emerald Creek 17010304 3593	PN016 _03	Temperature	1	None	None	N/A
Gold Center Creek 17010304 3596	PN019 _02/03	Sediment	0	Delist for sediment	None	WBAGII and sediment model results
Gold Center Creek 17010304 3596	PN019 _02/03	Temperature	1	None	None	N/A
Flewsie Creek 17010304 7596	PN018 _02	Sediment	0	Delist for sediment	None	WBAGII and sediment model results
Flewsie Creek 17010304 7596	PN018 _02	Temperature	1	None	None	N/A
Gramp Creek 17010304 7598	PN019 _02	Bacteria	0	Delist for bacteria	None	Bacteria standard not exceeded
Gramp Creek 17010304 7598	PN019 _02	Sediment	0	Delist for sediment	None	WBAGII and sediment model results
Gramp Creek 17010304 7598	PN019 _02	Temperature	1	None	None	Covered by Gold Center Creek Temperature TMDL

¹WBAGII – *Water Body Assessment Guidance*, Version II.